

REMARKS

This is in response to the Office Action mailed March 18, 2008.

Claims 1 through 3, 5, 6, 8, 18 through 20, 22, 23 and 25 are currently pending in the application.

Claims 1-3, 5, 6, 8, 18-20, 22, 23 and 25 stand rejected.

Applicants have amended claims 1 and 18, and respectfully request reconsideration of the application as amended herein.

35 U.S.C. § 103(a) Obviousness Rejections

Obviousness Rejection Based on Sakemi et al. (U.S. Patent 5,655,704) in view of Fjelstad (U.S. Provisional Application No. 60/078472)

Claims 1 through 3, 5, 6, 8, 18 through 20, 22, 23 and 25 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Sakemi et al. (U.S. Patent 5,655,704) in view of Fjelstad (U.S. Provisional Application No. 60/078472). Applicants respectfully traverse this rejection, as hereinafter set forth.

To establish a *prima facie* case of obviousness the prior art reference (or references when combined) **must teach or suggest all the claim limitations**. *In re Royka*, 490 F.2d 981, 985 (CCPA 1974); *see also* MPEP § 2143.03. Additionally, the Examiner must determine whether there is “an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR Int’l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1740-1741, 167 L.Ed.2d 705, 75 USLW 4289, 82 U.S.P.Q.2d 1385 (2007). Further, rejections on obviousness grounds “cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *Id* at 1741, quoting *In re Kahn*, 441, F.3d 977, 988 (Fed. Cir. 2006). Finally, to establish a *prima facie* case of obviousness there must be a reasonable expectation of success. *In re Merck & Co., Inc.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986). Furthermore, the reason that would have prompted the combination and the reasonable expectation of success must be found in the prior art, common knowledge, or the nature of the problem itself, and not based on the Applicant’s disclosure. *DyStar Textilfarben GmbH & Co. Deutschland KG v. C. H. Patrick Co.*, 464 F.3d 1356, 1367

(Fed. Cir. 2006); MPEP § 2144. Underlying the obvious determination is the fact that statutorily prohibited hindsight cannot be used. *KSR*, 127 S.Ct. at 1742; *DyStar*, 464 F.3d at 1367.

After carefully considering the cited prior art, the rejections, and the Examiner's comments, Applicants have amended the claimed invention to clearly distinguish over the cited prior art.

Applicants assert that the Sakemi et al. reference in view of Fjelstad reference cannot and does not establish a *prima facie* case of obviousness under 35 U.S.C. § 103 regarding presently amended independent claims 1 and 18 because the Sakemi et al. reference in view of Fjelstad reference does not teach or suggest all the claim limitations of the claimed inventions.

Turning to the cited prior art, the Sakemi et al. reference teaches or suggests a solder ball mounting apparatus using a template 4 to position solder balls 3 from a hopper 12 onto pads 2a of a substrate 2. The substrate 2 only having a plurality of electrodes 2a above the surface of the substrate 2, not having any electrodes whatsoever recessed into the surface of the substrate 2. There is no teaching or suggestion in the Sakemi et al. reference to dispense solder paste from the hopper 12 into or through a template 4 onto the substrate 2. There is no description whatsoever in the Sakemi et al. reference for dispensing solder balls 3 onto electrodes 2a located in recesses or level surfaces of the substrate 2. The Sakemi et al. reference clearly describes solely the placement of solder balls 3 on the curved surfaces of the electrodes 2a which are neither level nor recessed.

The Fjelstad reference teaches or suggests a stencil having apertures therein having a diameter larger than the diameter of a solder ball to be passed therethrough but less than two times diameter of the solder ball to be passed therethrough. The Fjelstad reference contains no teaching or suggestion regarding the spacing of the stencil from the hopper.

Applicants assert that the combination of the Sakemi et al. reference in view of Fjelstad reference does not teach or suggest the claim limitations of presently amended independent claims 1 and 18 calling for "a hopper having side walls formed at a continuous uninterrupted angle extending from an upper opening at the top of the hopper having a first dimension for feeding spheres into a smaller bottom opening having a dimension smaller than the first dimension of the upper opening extending across said first pattern for dispensing said spheres

into said plurality of through-holes extending across said stencil plate, the bottom opening having width in the range of at least two diameters of a conductive sphere to about ten diameters of a conductive sphere, said hopper having a bottom lower surface spaced from an upper surface of the stencil plate a distance in the range of about less than one-half the diameter of a conductive sphere to about less than one-third the diameter of a conductive sphere” and “a hopper having a top opening having a first dimension narrowing through a continuous constant angle from the top opening to a bottom opening with a second dimension extending across said pattern for dispensing said spheres into said plurality of through-holes of said pattern of said stencil plate, the bottom opening having width in the range of at least two diameters of a conductive sphere to about ten diameters of a conductive sphere, said hopper having a bottom lower surface spaced from an upper surface of the stencil plate a distance in the range of about less than one-half the diameter of a conductive sphere to about less than one-third the diameter of a conductive sphere”. Applicants assert that neither the combination of the Sakemi et al. reference nor the Fjelstad reference nor any combination of the Sakemi et al. reference in view of Fjelstad reference teaches or suggests such claim limitations as the Sakemi et al. reference teaches or suggests a hopper having a vertical wall having a right angle opening at the bottom thereof while the Fjelstad reference has the same configuration or a vertical wall terminating in an enlarged opening. Applicants assert that any combination of the Sakemi et al. reference in view of Fjelstad reference teaches or suggests a vertical wall termination in a right angle opening or an enlarged opening. Such are not the claimed inventions of presently amended independent claims 1 and 18. Therefore, presently amended independent claims 1 and 18 are allowable as well as the dependent claims therefrom.

Obviousness Rejection Based on Sakemi et al. (U.S. Patent 5,655,704) in view of Fjelstad (U.S. Provisional Application No. 60/078472) and further in view of U.S. Patent 6,253,985 to Kajii

Claims 1 through 3, 6, 8, 18 through 20, 22, 23 and 25 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Sakemi et al. (U.S. Patent 5,655,704) in view of Fjelstad (U.S. Provisional Application No. 60/078472) and further in view of Kajii (U.S. Patent No. 6,253,985). Applicants respectfully traverse this rejection, as hereinafter set forth.

To establish a *prima facie* case of obviousness the prior art reference (or references when combined) **must teach or suggest all the claim limitations**. *In re Royka*, 490 F.2d 981, 985 (CCPA 1974); *see also* MPEP § 2143.03. Additionally, the Examiner must determine whether there is “an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR Int’l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1740-1741, 167 L.Ed.2d 705, 75 USLW 4289, 82 U.S.P.Q.2d 1385 (2007). Further, rejections on obviousness grounds “cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *Id* at 1741, quoting *In re Kahn*, 441, F.3d 977, 988 (Fed. Cir. 2006). Finally, to establish a *prima facie* case of obviousness there must be a reasonable expectation of success. *In re Merck & Co., Inc.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986). Furthermore, the reason that would have prompted the combination and the reasonable expectation of success must be found in the prior art, common knowledge, or the nature of the problem itself, and not based on the Applicant’s disclosure. *DyStar Textilfarben GmbH & Co. Deutschland KG v. C. H. Patrick Co.*, 464 F.3d 1356, 1367 (Fed. Cir. 2006); MPEP § 2144. Underlying the obvious determination is the fact that statutorily prohibited hindsight cannot be used. *KSR*, 127 S.Ct. at 1742; *DyStar*, 464 F.3d at 1367.

After carefully considering the cited prior art, the rejections, and the Examiner’s comments, Applicants have amended the claimed invention to clearly distinguish over the cited prior art.

Applicants assert that the Sakemi et al. reference in view of Fjelstad reference cannot and does not establish a *prima facie* case of obviousness under 35 U.S.C. § 103 regarding presently amended independent claims 1 and 18 because the Sakemi et al. reference in view of Fjelstad reference does not teach or suggest all the claim limitations of the claimed inventions.

Turning to the cited prior art, the Sakemi et al. reference teaches or suggests a solder ball mounting apparatus using a template 4 to position solder balls 3 from a hopper 12 onto pads 2a of a substrate 2. The substrate 2 only having a plurality of electrodes 2a above the surface of the substrate 2, not having any electrodes whatsoever recessed into the surface of the substrate 2. There is no teaching or suggestion in the Sakemi et al. reference to dispense solder paste from the hopper 12 into or through a template 4 onto the substrate 2. There is no description whatsoever

in the Sakemi et al. reference for dispensing solder balls 3 onto electrodes 2a located in recesses or level surfaces of the substrate 2. The Sakemi et al. reference clearly describes solely the placement of solder balls 3 on the curved surfaces of the electrodes 2a which are neither level nor recessed.

The Fjelstad reference teaches or suggests a stencil having apertures therein having a diameter larger than the diameter of a solder ball to be passed therethrough but less than two times diameter of the solder ball to be passed therethrough. The Fjelstad reference contains no teaching or suggestion regarding the spacing of the stencil from the hopper.

The Kajii reference teaches or suggests a hopper 13 having a vertical wall terminating in a frusto-conical section at the outlet thereof.

Applicants assert that the combination of the Sakemi et al. reference in view of Fjelstad reference and in further view of the Kajii reference does not teach or suggest the claim limitations of presently amended independent claims 1 and 18 calling for “a hopper having side walls formed at a continuous uninterrupted angle extending from an upper opening at the top of the hopper having a first dimension for feeding spheres into a smaller bottom opening having a dimension smaller than the first dimension of the upper opening extending across said first pattern for dispensing said spheres into said plurality of through-holes extending across said stencil plate, the bottom opening having width in the range of at least two diameters of a conductive sphere to about ten diameters of a conductive sphere, said hopper having a bottom lower surface spaced from an upper surface of the stencil plate a distance in the range of about less than one-half the diameter of a conductive sphere to about less than one-third the diameter of a conductive sphere” and “a hopper having a top opening having a first dimension narrowing through a continuous constant angle from the top opening to a bottom opening with a second dimension extending across said pattern for dispensing said spheres into said plurality of through-holes of said pattern of said stencil plate, the bottom opening having width in the range of at least two diameters of a conductive sphere to about ten diameters of a conductive sphere, said hopper having a bottom lower surface spaced from an upper surface of the stencil plate a distance in the range of about less than one-half the diameter of a conductive sphere to about less than one-third the diameter of a conductive sphere”. Applicants assert that neither the

combination of the Sakemi et al. reference nor the Fjelstad reference nor any combination of the Sakemi et al. reference in view of Fjelstad reference teaches or suggests such claim limitations as the Sakemi et al. reference teaches or suggests a hopper having a vertical wall having a right angle opening at the bottom thereof while the Fjelstad reference has the same configuration or a vertical wall terminating in an enlarged opening and the Kajii reference teaches or suggests a hopper having a vertical wall terminating in the frusto-conical surface at the outlet. Applicants assert that any combination of the Sakemi et al. reference in view of Fjelstad reference and in view of the Kajii reference teaches or suggests a vertical wall termination in a right angle opening or an enlarged opening or a conical surface. Such are not the claimed inventions of presently amended independent claims 1 and 18. Therefore, presently amended independent claims 1 and 18 are allowable as well as the dependent claims therefrom.

ENTRY OF AMENDMENTS

The amendments to claims 1 and 18 above should be entered by the Examiner because the amendments are supported by the as-filed specification and drawings and do not add any new matter to the application. Further, the amendments do not raise new issues or require a further search.

CONCLUSION

Claims 1 through 3, 5, 6, 8, 18 through 20, 22, 23 and 25 are believed to be in condition for allowance, and an early notice thereof is respectfully solicited. Should the Examiner determine that additional issues remain which might be resolved by a telephone conference, the Examiner is respectfully invited to contact Applicants' undersigned attorney.

Respectfully submitted,



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